

FIGURE 1B

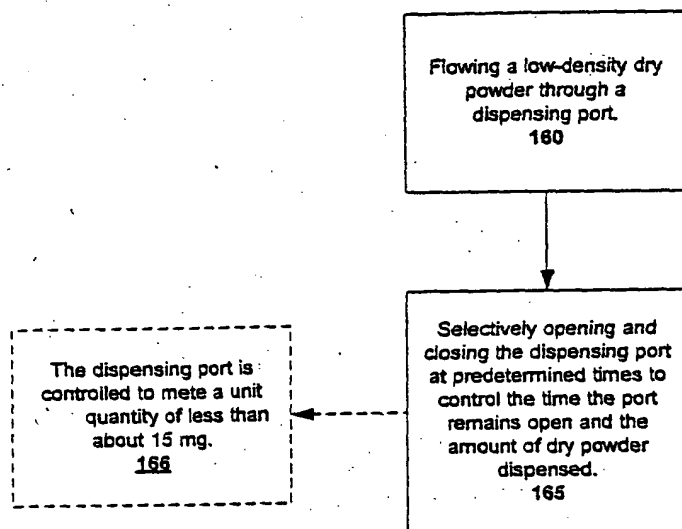
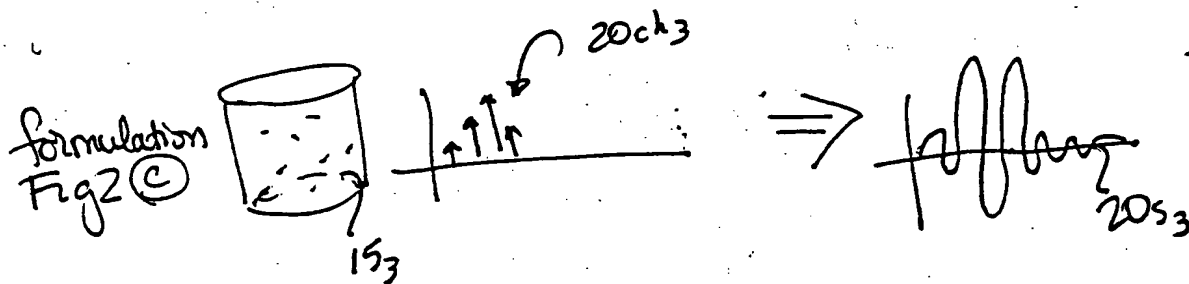
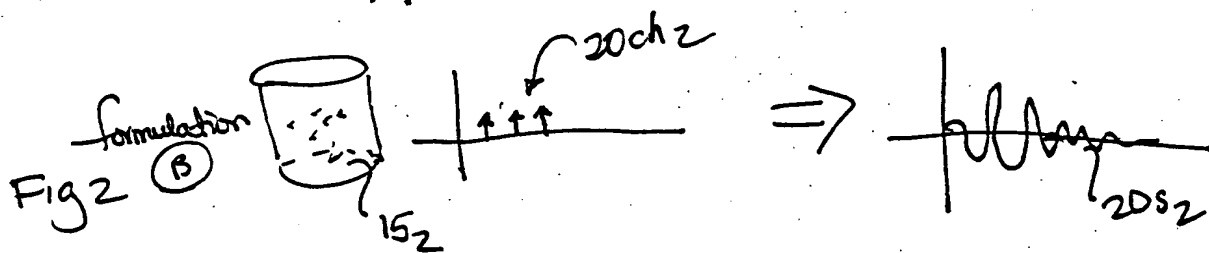
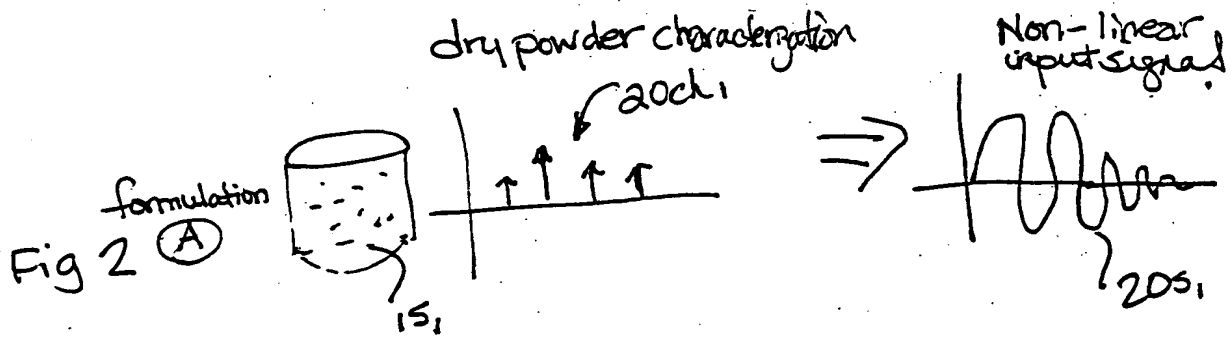


FIGURE 1C



SIGNAL GENERATION ALGORITHM

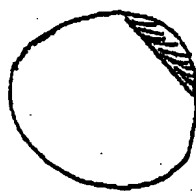
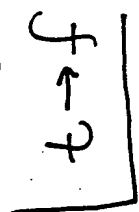


Fig. 3A

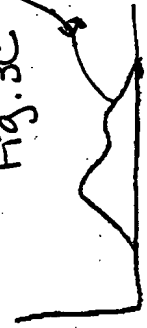
Measure time between
overlances for
powders in
rotating drum

Fig. 3B



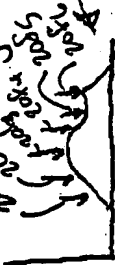
convert time
to frequency
Space

Fig. 3C



plot distribution
of frequencies

Fig. 3D



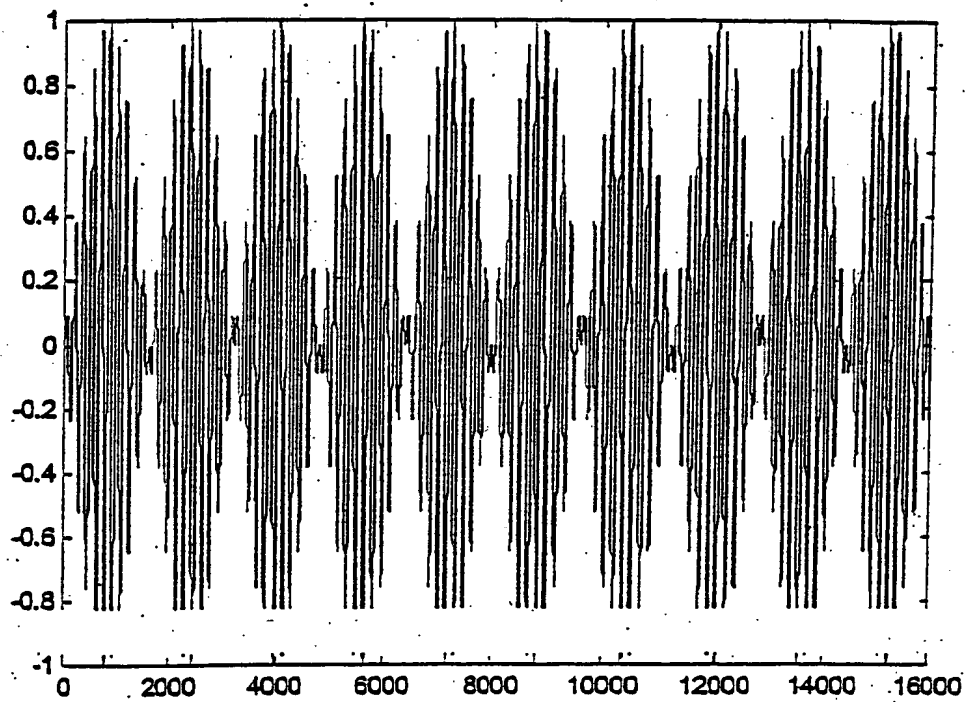
Record top six most
observed frequencies,
typically representing
75% of distribution

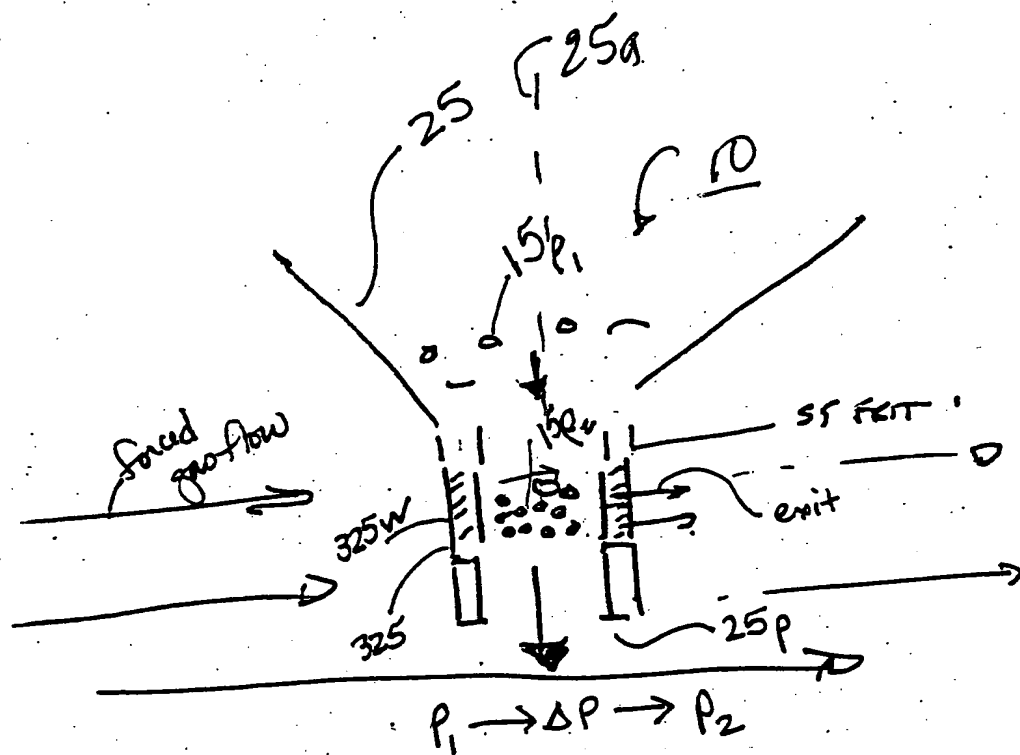
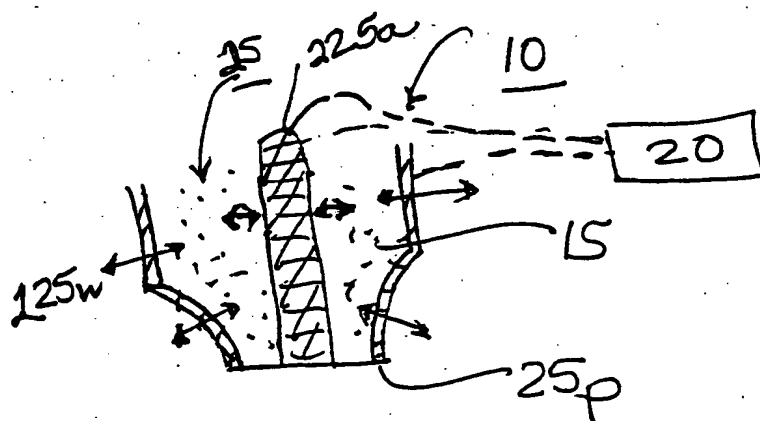
Fig. 3E



Superimpose these six
frequencies to construct
a single superposition
Signal (can include
step at adjusting relative
amplitudes)

FIGURE 14





NON-LINEAR VIBRATION / CENTRIFUGATION PRINCIPLE OF POWDER FILLING.

BASIC PRINCIPLE:

COMBINE NON-LINEAR FUNCTION
WITH CENTRIFUGAL MOTION

THIS CAN BE ADAPTED
TO LOCAL NON-LINEAR
VIBRATION.

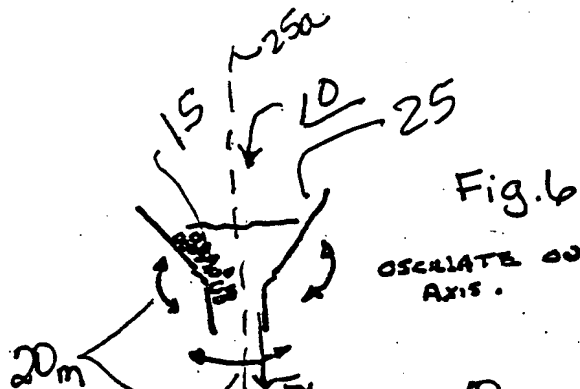


Fig. 6

OSCILLATE ON
AXIS.

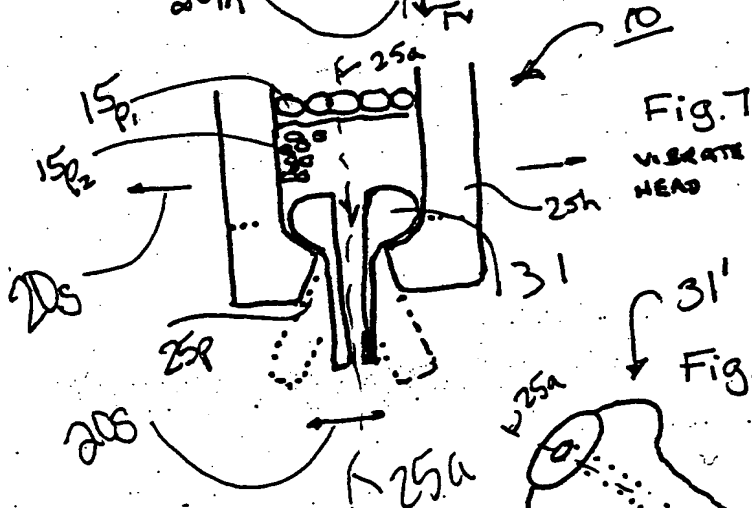


Fig. 7

VIBRATE
HEAD

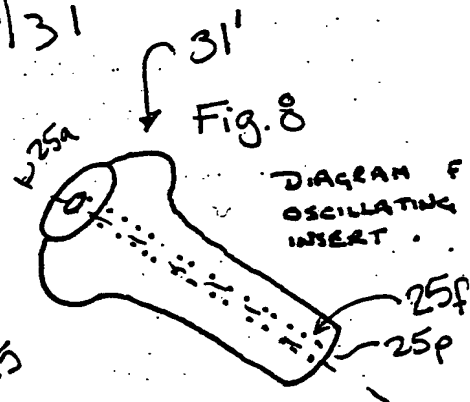


Fig. 8

DIAGRAM OF
OSCILLATING
INSERT.

VIBRATION CAN BE
APPLIED TO A
RACK OF HEADS FILLING
FROM SINGLE HOPPER.

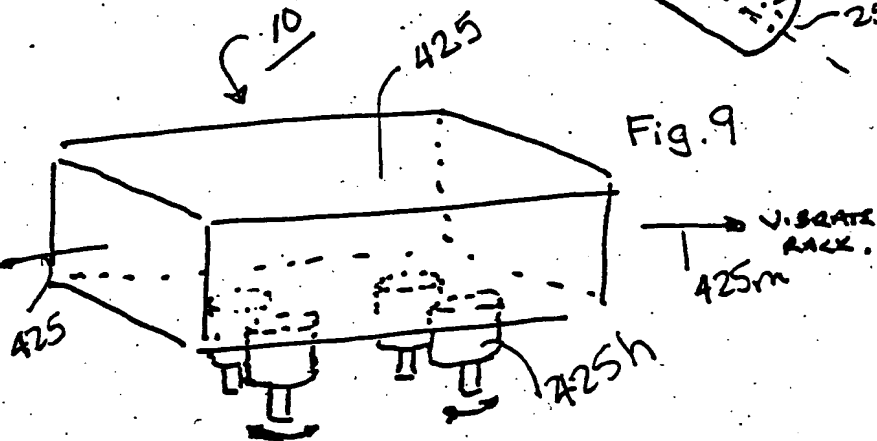
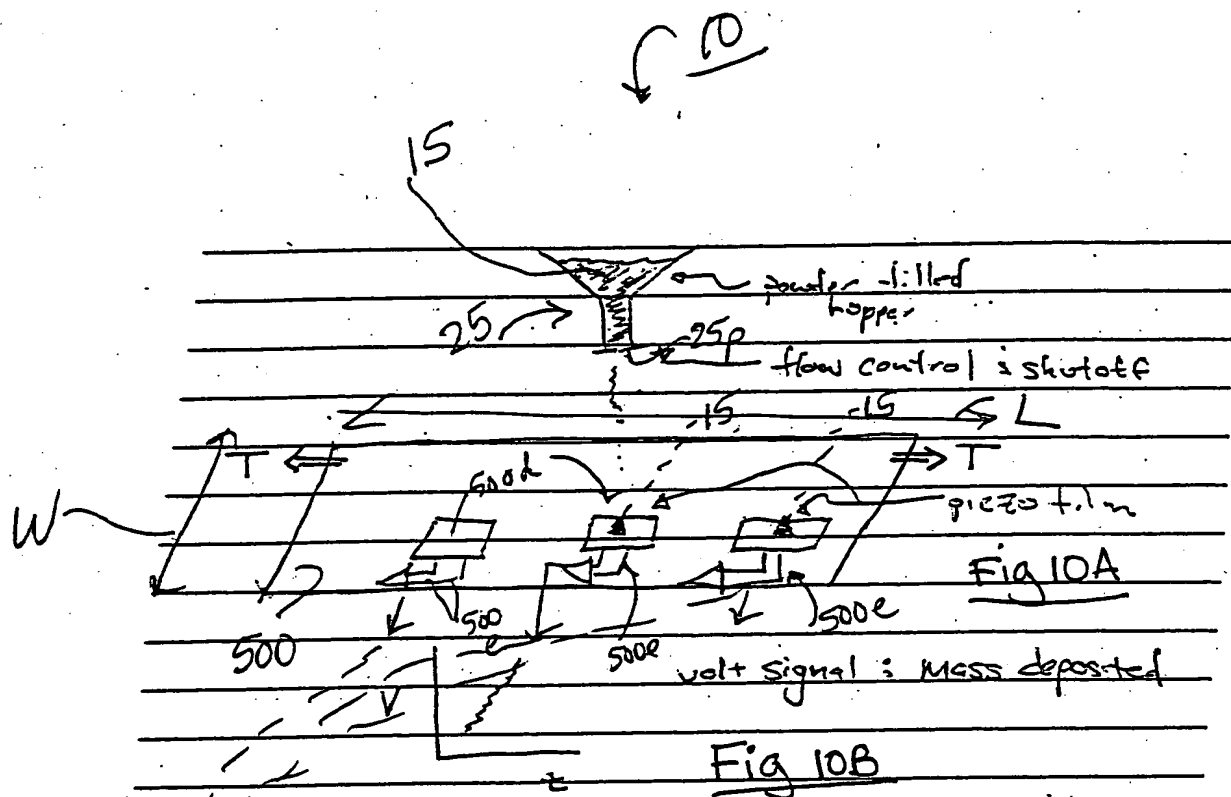


Fig. 9

VIBRATE
RACK.

RADIUS (OR EXTREMES) OF MOTION CAN BE VERY SMALL. AT HIGH FREQUENCY
THE ANGULAR VELOCITY WILL BE SUFFICIENT TO GIVE DIRECTIONAL
ACCELERATION TO PARTICLES.



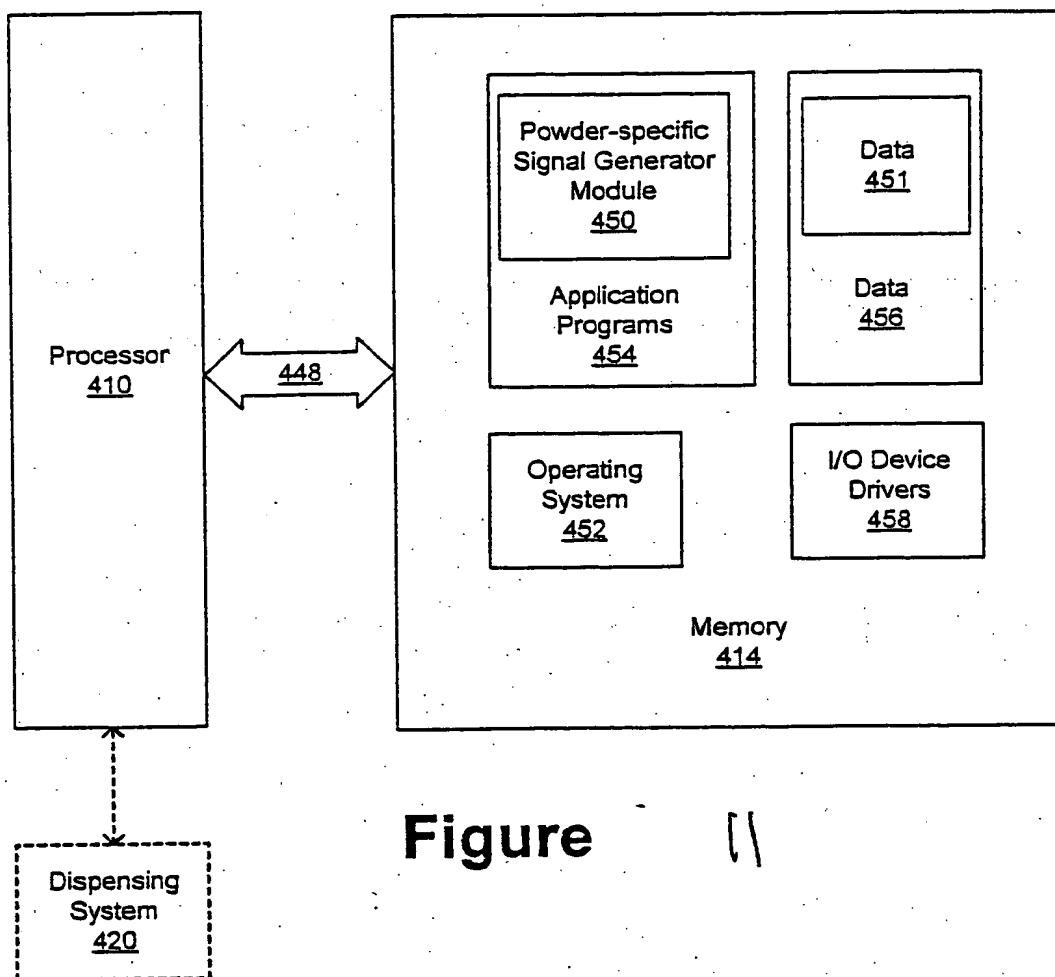


Figure 11

FIGURE 12

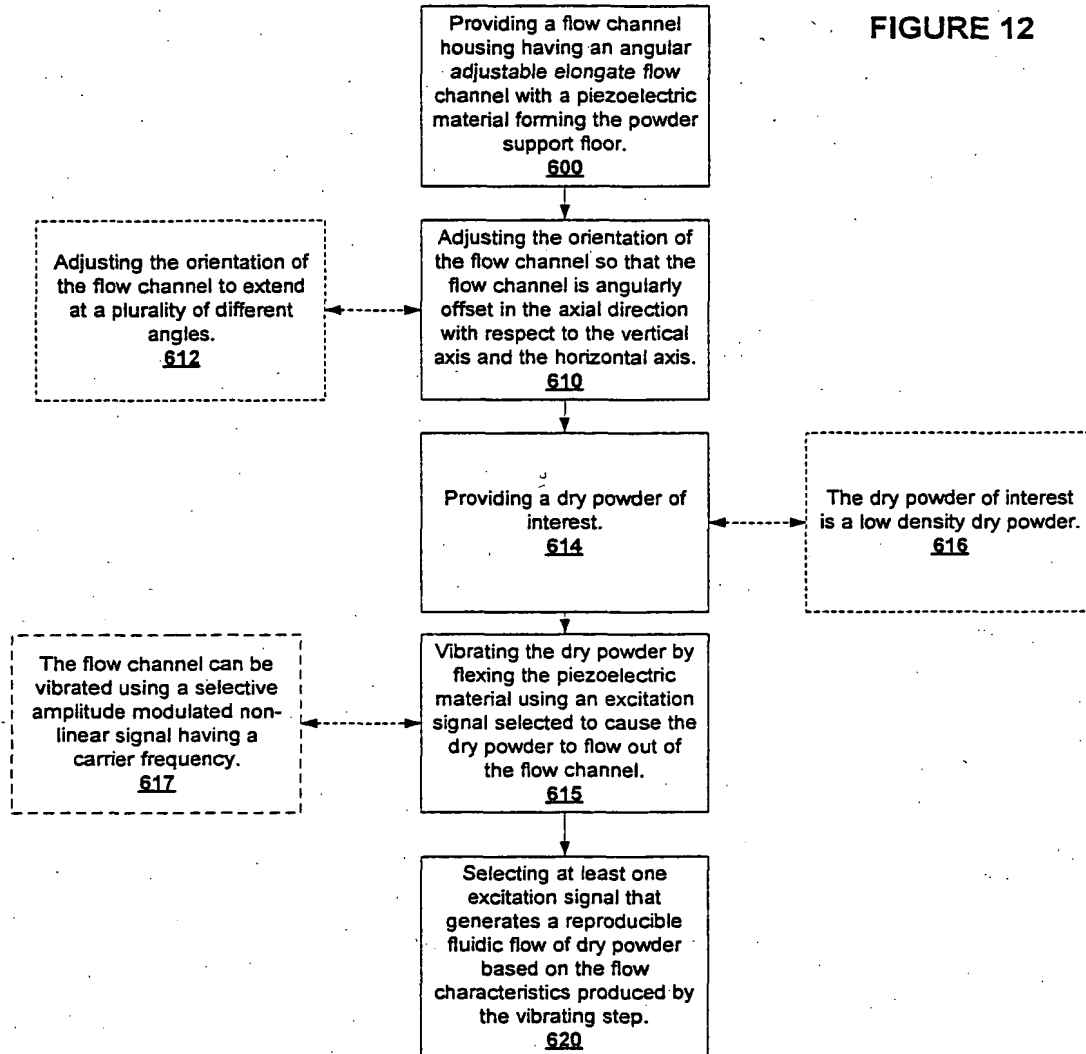
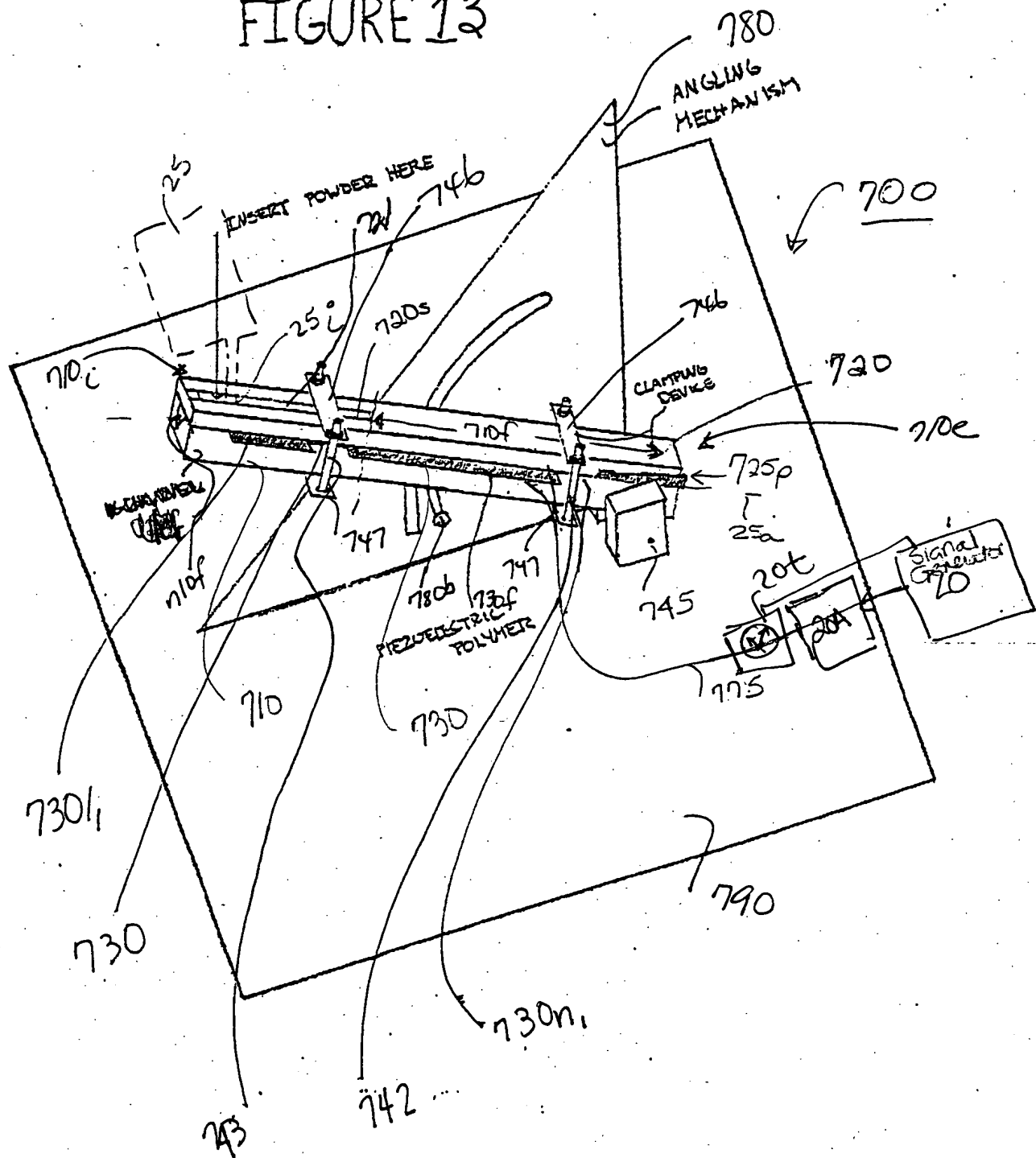
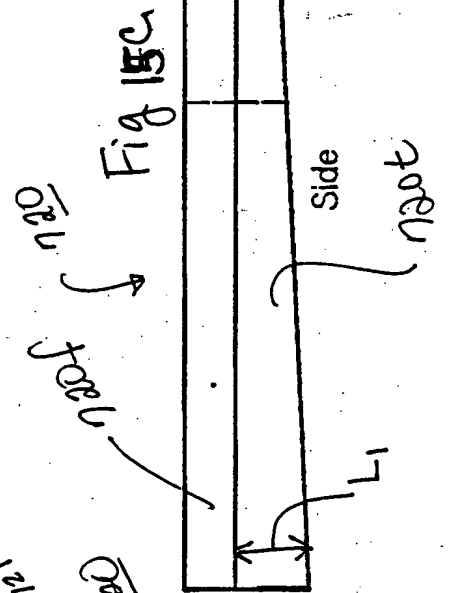
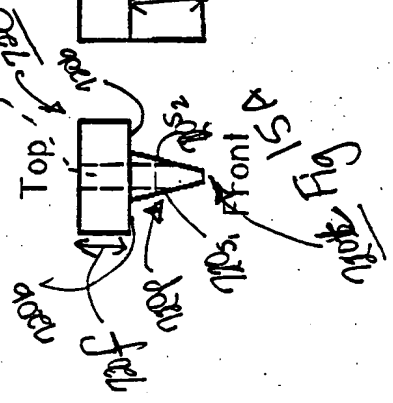
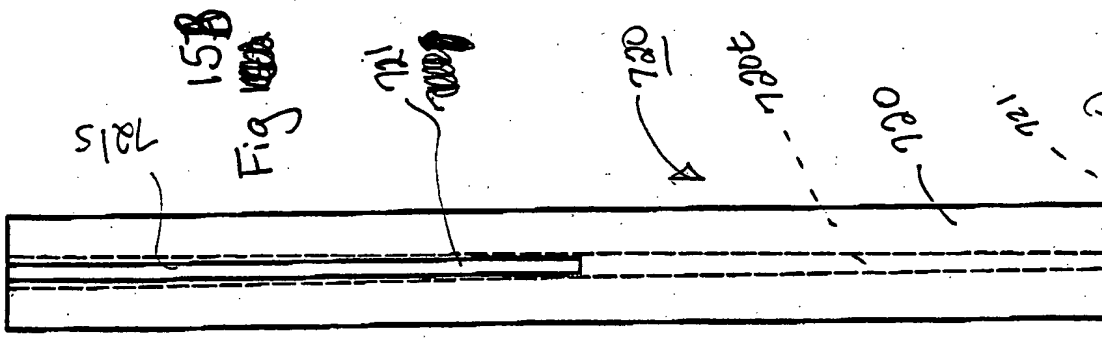


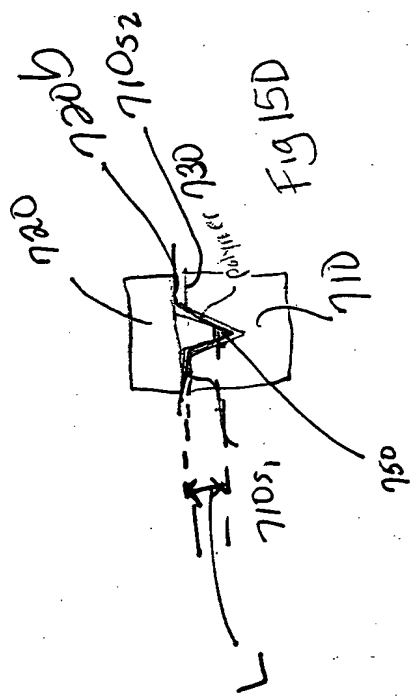
FIGURE 13







NOT TO SCALE



Part 3: Piezoelectric Polymer
NOT TO SCALE

